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A STUDY ON THE AWARENESS AND KNOWLEDGE LEVELS OF GRADUATES ON SIGNIFICANCE OF PLANT BASED MILK

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ABSTRACT

Worldwide, the market for plant-based milk substitutes is expanding significantly in the category of functional and specialty beverages under the newer food product development umbrella. These days, consumers are preferring milk substitutes due to factors including lactose intolerance, allergies to cow's milk, hypercholesterolemia prevalence, calorie concerns, and a growing demand for vegan diets. The present study aimed to know the awareness and knowledge levels on significance of Plant based milk. Purposive sampling was done to collect the data from 50 non agriculture graduate respondents both male and female of age 20-35 from two states Andhra Pradesh and Telangana using a structured closed-ended questionnaire distributed via Google Forms and collected data was analyzed using IBM SPSS statistics. The results revealed majority respondents are non-vegetarian and consumed Buffalo milk in various forms. Majority of them were not aware of the nutritional content or the specific vitamins and minerals in varieties of plant-based milk and they also displayed lack of awareness about specific health benefits and nutrition. The study found that the participants underscore the need for increased knowledge and awareness initiatives regarding plant-based milk alternatives in optimizing their dietary habits for overall well-being.

***Keywords*:** Plant based milk, awareness, knowledge, vegan diet, milk substitutes, and calories.

Introduction

Worldwide, the market for plant-based or non-dairy milk substitutes is expanding significantly in the category of functional and specialty beverages under the newer food product development umbrella. These days, consumers are preferring milk substitutes due to factors including lactose intolerance, allergies to cow's milk, hypercholesterolemia prevalence, calorie concerns, and a growing demand for vegan diets. These can be an affordable option for those living in low-income nations or in areas with limited access to cow's milk (Sethi *et al.,* 2016). Plant-based milk substitutes are fluids made from plant material (cereals, pseudo-cereals, legumes, oilseeds, and nuts) extracted in water and then homogenised. This produces a particle size distribution in the range of 5–20 µm, which closely resembles the consistency and appearance of cow's milk (Benmeziane & Belleili, 2023). Plant Based Milk Alternatives formulation options are increasing as traditional seeds and nuts are revived from their limited local uses (Reyes-Jurado *et al.,* 2023)

Despite the lack of a clear description and classification for these plant-based milk substitutes in the literature, an attempt has been made to group them generally into the following five categories: Based on cereal: Oat milk, rice milk and corn milk. Based on legumes: milk from cowpeas, peanuts, lupins, and soybeans. Nut-based: milk from almonds, coconut, hazelnuts, pistachios, and walnuts. Sunflower, hemp, flax, and sesame milks are seed-based. Quinoa, Teff,

and amaranth milks are pseudo-cereal-based (Kaur *et al.,* 2025).

In a study it was found that among respondents, the word PBD (Plant Based Diet) was least familiar and there was little objective understanding of PBD composition (Faber *et al.,* 2020). Yet another study examined how actual and prospective customers saw dairy analogues and assessed their level of comprehension. Despite their degree of education, consumers appear to be less aware of dairy alternatives, as seen by the research observations (Parmar *et al.,* 2023 and Su *et al.,* 2023). This study attempts to explore these areas by offering a thorough examination of consumer awareness and knowledge about plant-based milk substitutes.

Materials and Methods

Research design and sample selection

The present research was an exploratory study and was carried out in Department of Food and Nutrition and Extension Education and Communication Management, PGRC, PJTAU, Hyderabad. The data was collected from a total of 50 respondents both male and female (Non Agri Graduates) of age group 20-35 belonging to Andhra Pradesh and Telangana to know the awareness and knowledge levels on significance of Plant based milk.

Instruments

With the focus on objectives of the study, a structured closed-ended questionnaire was developed. The questionnaire draws upon methodologies in the works outlined below (Pritulska *et al*., 2020 and Moss *et al*., 2022), with appropriate modifications.

Data Analysis

The data obtained was quantified and put into statistical analysis for drawing meaningful inferences. The statistical analysis was carried out using IBM SPSS Statistics for Windows, Version 16.0.

Results and Discussion

Table 1 : Demographic Information of the respondents

Demographics	Categories	Frequency (*f*)	Percentage (%)
Age	20-25	20	40
	25-30	25	50
	30-35	5	10
Gender	male	24	48
	Female	26	52
Education	B.Tech	16	32
	B.Sc	7	14
	B.Com	5	10
	M.Sc	13	26
	M.Tech	2	4
	MBA	5	10
	Ph.D	2	4
Occupation	Software employee	11	22
	Other Pvt. Employee	15	30
	Home maker	4	8
	student	20	40
Place of Residence	Rural	10	20
	Urban	40	80
Income	Nil	13	26
	<1 Lakh	3	6
	1 lakh- 5 lakh	17	34
	5 lakh-10 lakh	17	34

Table 1 shows respondents' demographics: 40% were aged 20–25, 50% were 25–30, and 10% were 30–35 years. Gender distribution was nearly equal (48% males, 52% females). B.Tech. graduates formed 32%. Students comprised 40%, followed by private employees (30%). Most lived in urban areas (80%). Income was evenly split, with 34% earning Rs. 1–5 lakh and 34% earning Rs. 5–10 lakh annually.

Table 2 : Consumption habits of the respondents

Consumption Habits	Categories	Frequency (*f*)	Percentage (%)
Dietary Habits	non vegetarian	43	86
	vegetarian	7	14
Frequency of milk Consumption	Daily	21	42
	3-4 times a week	20	40
	rarely	7	14
	never	2	4
Type of Milk Consumption	Buffalo milk	43	86
	Cow milk	7	14
Typical usage of milk or milk-based products in diet	adding to coffee or tea	5	10
	adding to coffee or tea, making smoothies or shakes	2	4
	adding to coffee or tea, making curd	18	36
	drinking plain, adding to coffee or tea, making curd	8	16
	drinking plain, adding to coffee or tea, making curd, making	2	4

	smoothies or shakes		
	drinking plain, adding to coffee or tea, making curd, using in cereal or oatmeal, cooking or baking, making smoothies or shakes	2	4
	drinking plain, adding to coffee or tea, making curd, using in cereal or oatmeal, cooking or baking, making smoothies or shakes, others	2	4
	drinking plain, making curd, using in cereal or oatmeal	2	4
	making curd	5	10
	making curd, cooking or baking	2	4
	using in cereal or oatmeal	2	4
First insight about plant-based milk	advertising	17	34
	friends/family	12	24
	health professionals	3	6
	social media	18	36

Table 2 shows 86% non-vegetarians and 14% vegetarians; 42% drank milk daily and 40% drank it 3–4 times/week, with 86% preferring buffalo milk. A related study's findings showed that while some people identified as vegetarians, the majority of men (87.0%) and women (91.0%) classified as non-vegetarians. Milk consumption was every day and that of buffalo milk consumption was in majority of male (70.0%) and female (71.0%) respondents (Katheti, 2022). Majority (36%) of the respondents indicated that they usually did so by brewing tea or coffee with milk or making curd followed by others.

Social media influenced 36% of respondents, advertising 34%, friends/family 24%, and healthcare professionals 6%; many said they would replace dairy with plant-based milk if social-media influencers promoted it as a staple (Basu *et al.,* 2023).

Table 3 : Awareness level of the respondents

Awareness related Statements	Categories	Frequency (*f*)	Percentage (%)
Aware of plant-based milk alternatives	Yes	27	54
	No	23	46
Aware of the nutritional content of plant-based milk	Yes	10	20
	No	40	80
Consulted a health professional/nutritionist regarding health benefits of plant-based milk	Yes	2	4
	No	48	96
Aware of the nutritional differences between plant-based milk and animal-based milk	Yes	7	14
	No	43	86
Aware of any potential deficiencies associated with plant-based milk	Yes	2	4
	No	48	96
Aware of the nutritional benefits of almond milk	Yes	8	16
	No	42	84
Aware of any specific vitamins or minerals naturally present in almond milk	Yes	8	16
	No	42	84
Aware of the nutritional benefits of Soya milk?	Yes	8	16
	No	42	84
Aware of any specific vitamins or minerals that are naturally present in Soya milk	Yes	8	16
	No	42	84
Aware of the nutritional benefits of coconut milk	Yes	8	16
	No	42	84
Aware of any specific vitamins or minerals that are naturally present in coconut milk	Yes	8	16
	No	42	84
Aware of the environmental impact of animal-based milk production	Yes	7	14
	No	43	86
Cost perception towards plant based milk	Yes	32	64
	No	18	36
Aware of any common misconceptions about plant-based milk	Yes	3	6
	No	47	94
Aware of any strategies for ensuring adequate nutrient intake when substituting plant-based milk for animal-based milk in the diet?	Yes	5	10
	No	45	90

The study of respondent's awareness of plant-based milk substitutes as depicted in Table 3 revealed that 54% were aware of them. According to a study, majority (84%) of respondents have heard of or seen plant-based milks. Only 20% of participants knew about the nutritional value of plant-based milk (Hughes *et al.,* 2021).

Most respondents (96%) had not sought professional advice on plant-based milks and were unaware they may have nutritional inadequacies; 86% did not know the nutritional differences from animal milks, and only 16% understood the specific vitamins/minerals in different milks (84% unaware). Nine out of ten consumers who have tried plant-based milk report that it is palatable, easily absorbed, and has many health and nutritional benefits (Crosser *et al.,* 2019).

Environmental impact of animal milk production was not known to 86% of the respondents. According to survey (Crosser *et al.,* 2019) majority of consumers surveyed showed that they were aware of the idea of sustainability. However, many people don't immediately associate plant-based milk with sustainability.

Cost consideration of plant-based milk was expressed by 64% of the respondents that was in line with a similar study which showed that the main barrier for adopting plant-based milk are its higher costs (Clark and Bogdan, 2019). Only 6% aware of misconceptions; 10% knew strategies to maintain nutrient adequacy when using plant-based milk.

Table 4 : Knowledge level of the respondents

Knowledge related Statements.	**Categories**	**Frequency (*f*)**	**Percentage (%)**
Suitability of plant-based milk more for certain dietary restrictions	Yes	38	76
	No	12	24
Knowledge towards benefits of long term consumption of plant-based milk is for improving health status	Yes	33	66
	No	17	34
plant-based milk contribution to weight management	Yes	28	56
	No	22	44
Adequate knowledge of consumers towards health benefits associated with plant-based milk	Yes	8	16
	No	42	84
Health benefits associated with plant-based milk?	Lower cholesterol	18	36
	Lactose-free	7	14
	Rich in antioxidants	13	26
	Lower in calories	5	10
	other	7	14
Provision of all the necessary nutrients found in animal-based milk by plant-based milk?	Yes	20	40
	No	30	60
Nutrient rich in almond milk	Vitamin E	37	74
	Vitamin C	5	10
	Vitamin K	8	16
Nutrient rich in soy milk	Protein	43	86
	Carbohydrate	5	10
	Fat	2	4
Nutrient rich in coconut milk	Fat	27	54
	Protein	17	34
	Carbohydrate	7	14
Confidence in identifying the nutrition labels on plant-based milk	Extremely confident	0	0
	Very confident	7	14
	Moderately confident	12	24
	Slightly confident	15	30
	Not confident at all	17	34
Rating the taste of plant-based milk compared to animal-based milk	Excellent	2	4
	Good	16	32
	Neutral	18	36

	Poor	12	24
	Very poor	2	4
factors influencing choice between plant-based and animal-based milk	Taste	4	8
	Health benefits	18	36
	Environmental concerns	5	10
	Price	5	10
	Allergies	3	6
	Not sure	15	30
Any allergies or sensitivities that affect your milk consumption choices	Yes	7	14
	No	43	86
noticed any difference in digestive comfort between plant-based and animal-based milk	Yes	0	0
	No	17	34
	Not aware	33	66
Allergens you are aware of in animal-based milk	Lactose	20	40
	Casein	10	20
	Whey	20	40
Frequency of purchasing plant-based milk products?	Always	0	0
	Occasionally	2	4
	Rarely	20	40
	Never	28	56
Factors that prevent you from choosing plant-based milk more frequently	Price	10	20
	Availability	8	16
	Taste	5	10
	Lack of awareness	27	54
Anticipation of changing your milk consumption habits in the future	Yes	18	36
	No	4	8
	May be.	28	56
Primary role of vitamin D fortification in both plant-based and animal-based milk?	To enhance the taste and flavor of milk	7	14
	To prevent spoilage during storage	3	6
	To support calcium absorption and bone health	37	74
	To increase protein content	3	6
Nutritional needs of infants and young children typically met in both plant-based and animal-based milk formulas	Through appropriate fortification to ensure adequate intake of essential nutrients	33	66
	Without any need for fortification, as milk formulas are inherently nutritious.	15	30
	By relying solely on natural nutrient content without fortification	2	4

Seventy-six percent viewed plant-based milk as suitable for certain dietary restrictions, 66% recognized potential long-term benefits, 56% linked it to weight management, yet 84% remained unaware of its overall health advantages. Positive views of plant-based milks' naturalness, health benefits, and nutritional parity encouraged consumption, while concerns about excessive processing or artificiality discouraged it (Martínez-Padilla *et al.,* 2023).

Sixty percent doubted plant-based milk's nutrient completeness. Consumer Reports showed 27% viewed plant-based milks as nutrient-dense, 26% disagreed, and 34% lacked confidence reading nutrition labels highlighting the need to improve nutrition-label literacy among students (Hughes *et al.,* 2021).

When choosing between plant-based and animal-based milk, taste was shown to be the most important element, followed by health advantages and environmental considerations. Findings of a related survey conducted by Pritulska *et al.* (2021) revealed that 12.4% of consumers prefer plant-based milk substitutes because of the taste, 35.8% due to healthy lifestyle, 10% of consumers due to ethical and environmental concerns and only 3% of customers are affected by the allergy.

Fifty-four percent cited lack of awareness as a deterrent to drinking plant-based milk, and another study found 44.7% had never considered nutritional differences between regular and plant-based milk (Pritulska *et al.,* 2021). A significant percentage of respondents (74%) understood that the main purpose of

vitamin D fortification in milk is to enhance calcium absorption and bone health.

Conclusion

In conclusion, participants' responses highlight the need for greater education and awareness about plant-based milk alternatives. Correcting misconceptions, sharing accurate nutritional and environmental information, and promoting consultation with health professionals can help individuals make informed, health-conscious, and ethical dietary choices.

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